



# How did Fujifilm innovate in the face of digital disruption while Kodak failed to survive?

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## **Abstract**

Innovation in business has been recognized in the literature as one of the most vital factors for survival. Research suggests that innovation can be of different types including breakthrough innovation, basic research, sustaining innovation and disruptive innovation. As the name suggests, the latter proves to be the most challenging for incumbents while providing an opportunity for newcomers. The photography industry is wide and constitutes many different companies with the most influential role being recognized as that by Kodak. Having established themselves in the film camera market over many years, nobody had expected the incumbent's downfall. While many reasons led to this, the biggest points at the company's inability to correctly and timely react to the disruptive innovation required in the face of the digital revolution. However, whilst they failed to take corrective measures, their close competitor Fujifilm was able to navigate the field and rise to the top. This paper aims to shed light on both the companies while using business theory to analyse why Fujifilm thrived in the face of innovation while Kodak failed to survive.

**Keywords:** Fujifilm, Innovation, Kodak, Photography

## **Introduction**

As per Steve Jobs, Innovation is the ability to see change as an opportunity and not a threat. Being one of the most important aspects of a business, this term has been brought up several times in the literature with varying definitions being concluded. In its most simple form, 'business innovation is when companies implement new processes, ideas, services, or products' (Green, 2022). Different types of innovation exist with each holding its own importance. However, disruptive innovation, particularly, has gained a lot of attention in the last few years given the impact of the digital revolution.

Though all industries are impacted by the many waves of changes and are tested in their ability to innovate and survive, the photography industry is a particularly interesting example. To begin with, the photography industry is

one that is unique in the manner that it is represented in almost all sectors, unlike most other industries that can be defined in only one. For example, the industry may be involved in the secondary sector through the production of electronic equipment, it could be deemed a part of the tertiary sector as it entails offering services and it may also be recognized as a part of the quaternary sector as it deals with research and development and continuously adopts to advancing technologies. Regardless of the blurred boundaries of this industry, it is most simply defined as one which is continually growing and involved in the production of goods and services related to photographs, images, and film (Uy, 2022).

One of the most prominent names in the world of photography is Kodak. Having been founded by George Eastman in the late 1880s, the company continued to have one of the most influential roles in photography throughout history. The company became very popular for their constant product and technological innovations which helped in the betterment of the photography industry and also had knock-on effects on many other industries. Some of the most known innovations included disposable cameras as well as film in rolls. Though the company enjoyed a lot of success and developed a strong reputation in the market, they were not able to stand the test of time and started to fail in the innovations they were making, particularly in photography, which is what they were always known for (Wyden, 2013).

An evident point at which Kodak started to take a turn for the worse was when the competition in the industry started to build up with the introduction of firms such as Fujifilm. The company that was founded in 1934 under a Japanese government plan with the aim of establishing a domestic photographic industry, also started with the production of films and progressed to producing cheap disposable cameras as well as high-end professional models. In the period between the 1980s and 1990s, Fujifilm had successfully placed itself as one of Kodak's biggest rivals. However, this all changed in the face of the digital disruption that took place in the photography industry as a result of the wider digital revolution (Ho & Chen, 2018).

Given that both the firms, Kodak, and Fujifilm, were faced with the same disruption, it is interesting to note that the former started to collapse while the latter successfully recreated itself. Therefore, it is worth considering the role disruptive innovation played in this outcome. In order to do the same, this paper aims to answer the research question: How did Fujifilm innovate in the face of digital disruption while Kodak failed to survive?

### **Innovation in business; a literature review**

Innovation is an integral part of business and has been covered extensively in the literature. However, there are many definitions provided for the term with Schumpeter being thought of as one of the first economists to discuss the importance of innovation. He did so by defining five different types of innovations including the introduction of a new product or qualitative change in an existing product, process innovation new to an industry, the opening

of a new market, development of new sources of supply of inputs such as raw materials and any changes in industrial organization (OECD, 1997).

A few years later, the Oslo Manual, published by the OECD, decided to focus on the first two categories defined by Schumpeter as they believed these were the easiest to define and measure. Thus, the manual identified two types of innovations: technological product innovation and technological process innovation. The former is defined as the process of producing a new or improved product whose characteristics differ significantly from previous models. On the other hand, the latter is defined as the adoption of new or significantly improved production methods. In both cases, the words 'new' and 'improved' apply specifically to the firm at hand implying that innovation can lead to the creation of entirely new knowledge as well as the diffusion of the already existing knowledge.

Much of the literature has also attempted to assess the different business factors that are impacted by innovation. For example, several studies (see for example, Geroski, 1995; Esteve-Pérez et al., 2004; Buddelmeyer et al., 2010; Kim and Lee, 2016) have shown that innovation has a positive influence on the survival of a company by using R&D specific data. Studies such as that by Neely and Hii (1998) also tested the relationship between innovation and business performance to conclude that there is in fact a positive correlation i.e., when a firm innovates more, it is likely to enhance its business performance. Furthermore, innovation is also deemed a competitive advantage for businesses to survive in turbulent environments. The ability to innovate thus has direct consequences for the ability to compete at the individual, firm, regional and national levels.

Given the importance of innovation, it is essential to acknowledge and understand its complexity of it. At its core, innovation boils down to solving problems and as a result of this, there are many different ways to innovate as a business may have a variety of problems to solve. In light of this, the literature recognizes four main types of innovation. The first is *sustaining innovation* which is one of the most common as it entails businesses attempting to improve existing capabilities in existing markets in order to sustain their position. The second is a *breakthrough innovation* which entails innovating by exploring unconventional skill domains (Satell, 2017). The third is *disruptive innovation* and usually pertains to a situation wherein an industry is shaken up by some kind of a shift and previously successful incumbents may stumble (Christensen et al., 2015). Lastly, basic research has also been deemed a form of innovation as it is believed that many of the ideas are retained through this process (Satell, 2017).

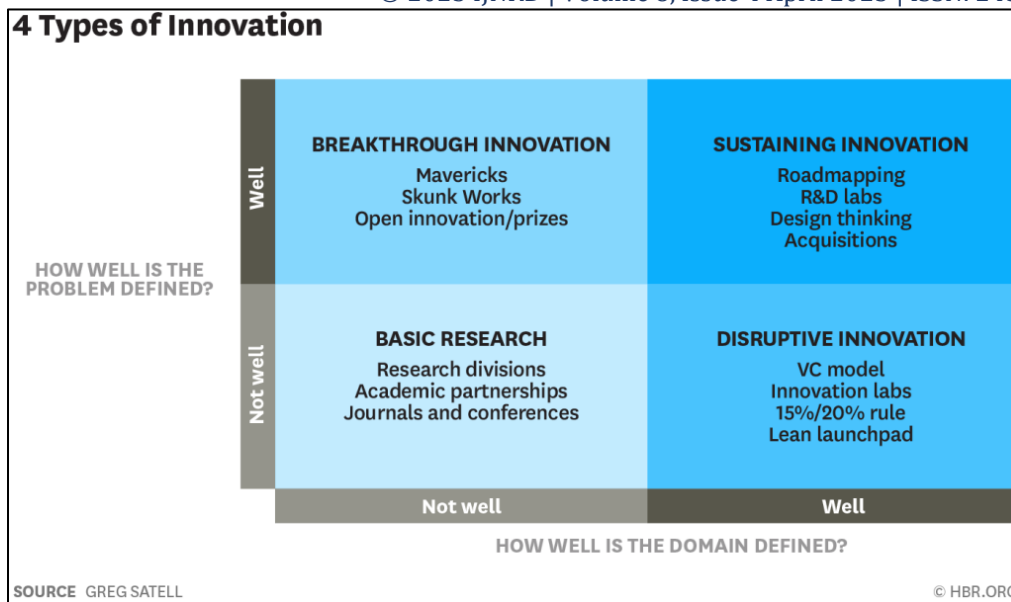


Figure 1: (Satell, 2017)

One common question that the literature attempts to answer is *why innovate?* Considering the focus of this paper, the paper by Neely and Hii (1998) provides the most fitting conclusions regarding the importance of innovation in the 1990s. There is strong importance placed on the various social, political, and technological changes that were rapidly taking place during this era. Many new terms were starting to surface with globalization, the borderless world, personal computers, and the Internet being a few of the most influential. With the human race having experienced two main waves of change previously i.e., the agricultural revolution and the industrial revolution, this was expected to be the beginning of the ‘third wave’. Albeit this third wave was not formally named at the time of this paper being written, it was correctly identified that it would be epitomized by the symbol of the personal computer. This ‘third wave’ was later formally recognized as the digital revolution.

Each of these waves of changes arguably triggered some form of disruptive innovation. Focusing on the latest wave of the digital revolution, it has been reported that the photography industry was hard hit by the transition that came about from conventional photography to digital photography. The implementation of digital photography was complex as information and communication technologies played a role as important as the camera itself. The reason for this is that the technology, namely computers, were required for the editing, saving, storing, and even sharing of photographs while the internet facilitated the distribution of multiple copies of images to several recipients in an efficient manner. There was, thus, a need for the incumbent firms and an opportunity for new firms to enter the market and respond to this disruption with innovation (Zhao, 2021).

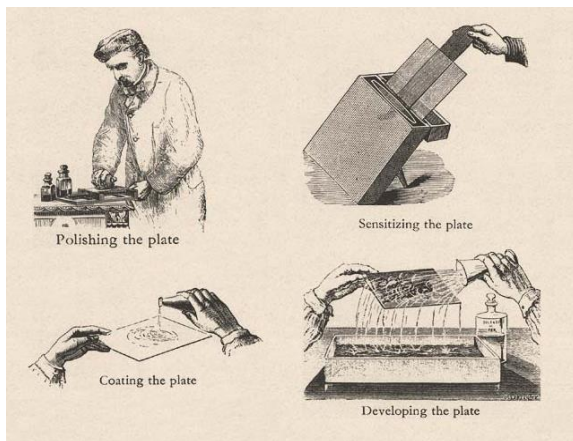
**Kodak; the ups and downs of an evolutionary company**

Figure 2: Wet-Plate Collodion Process

Here's a scenario; imagine preparing a glass plate then installing it on the back of a camera and proceeding to allow light to pass through the camera lens for it to focus on the pre-sensitized glass plate. After this, you carefully remove the plate from the camera and store it away from all light exposure only to treat it with a number of chemicals in a darkroom over days (Coe, 1976). Sounds strange? Well, using these 'wet plates' and chemicals was once the only way of taking photographs; complex and unimaginable as presumably agreed by almost everyone in today's age.

Around the late 1870s, George Eastman, a high school dropout, created 'dry plates' that were meant to be a replacement for the fragile wet glass plates. These would allow permanent images to form and bring about considerable changes including making cameras much more compact. Realizing this potential, Eastman developed a patented machine for producing large numbers of these dry plates in a bid to be able to start selling them under his founded company, Eastman Kodak Company. As time went by, the company grew, and hurdles presented themselves, but the founder persisted and wished to build further on the reputation Kodak had started to create for itself. Around 1883, Eastman made an announcement about introducing the film in rolls that would be adaptable to nearly all existing plate cameras - a definite turning point for both the company and the industry (Kodak, 2022).

An advertisement introducing the film in rolls in 1885 read, "shortly there will be introduced a new sensitive film which it is believed will prove an economical and convenient substitute for glass dry plates both for outdoor and studio work". During this time, photography was ruled by professional and amateur photographers. While the former practised photography on a commercial level by following the pre-stated rules, technical standards, and unwritten code of providing precision over aesthetics, the amateurs were mostly from the middle and upper classes of society and viewed photography as an art and considered it their hobby (Zimmerman 1995). For example, Johnson (2001) discusses how a review of amateur photography in an 1896 edition of the American magazine *Cosmopolitan*, encouraged those who viewed themselves as amateur photographers to study great works of art as the visual organization would train them to see the world 'artistically'. So, the innovation of film in rolls had to stand the test of these two groups of photographers.

After the launch of the innovation, there was some definite success, however, much of the existing literature provides insights into how the members of the photography community were not keen on this advancement. The main reason for the aforementioned was that the images produced on these films were of lower quality than those produced on the dry plates. As a result of this, both professional and amateur photographers ridiculed the concept.

In fact, even Kodak himself considered roll-film technology a failure (Jenkins, 1975) as many were left wondering if this technology was even needed at all! Taking this criticism on board, through more perseverance and refinement, Eastman arguably perfected the roll film and holder and took the company on a new and incredibly successful path.

The launch of the KODAK camera in 1888, priced at \$25, presented the foundation that was required to make photography available to everyone. This camera came preloaded with enough film for 100 snapshots and was then to be returned to Rochester where the factory would develop the film, make the prints and reload the camera with a new film - all for \$10. This system was largely a result of Eastman realizing that consumables were what provided the revenue so it was not the cameras that needed to come with a heavy price tag but instead the money-making potential was in the film. In line with making photography for all, especially amateurs with no professional photography experience, Eastman used advertising to make his genius innovation greatly successful. For example, one of the early advertising campaigns featured women and children operating the camera with the slogan “You press the button, we do the rest.” This truly underscored the ease of the Kodak system and started what could only be termed a national craze for snapshot photography (Fineman, 2004).

Kodak continued to invest heavily in film production and was one of the few companies that had developed the processes and knowledge to succeed with colour photography being introduced in the industry. By 1962, the company had achieved around \$1 billion in sales, and it is reported that by 1976, they had captured 90% of the US film market and 85% of the camera market. With Kodak becoming a family name and a big part of American life, continuous growth was in the books for the company (Lucas & Goh, 2009). They hit \$10 billion in sales by 1981 but at this point competitive pressures, particularly from Fuji Photo Film Co. (Fujifilm), started to hinder the progress and threaten future increases (Gavetti et al., 2004).

### **Fujifilm; the biggest threat to the ‘Kodak moment’**

In 1934, Fuji Photo Film Co., Ltd. was established with the main aim of producing photographic films. They continued to successfully produce films for a variety of purposes including photography, motion picture and X-ray. Over the years, diversification became a big part of the company’s strategy (The Economist, 2012). For example, in the 1940s, the company entered the lenses and optical glasses market and after the second world war, they started to penetrate the printing, medical and electronic imaging markets. One of the biggest launches for them was Fuji Xerox Co., Ltd which was created in a launch venture with UK-based Rank Xerox Limited (now Xerox Limited).

Having been formed under the Japanese government's strategy to establish a domestic photography industry, Fuji Photo enjoyed behaving like a near-monopoly for many years in Japan. Gradually, they began to gain considerable traction and market share in the US particularly when they started to offer cheaper film than main rivals Kodak, set up a film factory in the US and also became one of the title sponsors of the Olympics hosted in Los Angeles, 1984. So, while Fuji Photo was setting ground in a market long dominated by Kodak, the latter was struggling to penetrate

the Japanese market and even filed a petition with the US Commerce Department in 1995 arguing that this was a direct result of unfair practices adopted by Fuji. This complaint was then lodged with the World Trade Organization (WTO) which rejected it in 1998 (Gupta & Sarvani, 2002).

With the fierce competition increasing between these two companies, all seemed to stall in the face of the digital disruptions that started to occur worldwide. There was a need for innovation if companies wanted to survive. The remainder of this paper sets out to explore how the aforementioned led to Fujifilm's continued growth and Kodak's collapse to bankruptcy.

### **Where did Kodak go wrong?**

Many blame Kodak's inability to innovate for its eventual collapse. However, it is quite interesting to note that Steve Sasson, an engineer at Kodak, was the first to react to the disruption in the industry by inventing the digital camera in 1975. When this was presented to management, however, it was merely ridiculed with the potential being overlooked. After conducting research, in 1981, the company found that digital photography does in fact have the capability to threaten Kodak's long-standing film business, however, it was reported that the company would have at least 10 years to prepare for this transition (Mui, 2012). As time went by, the senior executives and managers who were strong advocates for Kodak's traditional analogue business, were unable to keep ignoring the digital threat and started to invest in it.

Regardless of all the above, the company still ended up filing for bankruptcy a few years later. Where they went wrong despite a strong start can be better understood through the lens of Christensen's theory of disruptive technologies. The aforementioned is a popular theory that explains the predicament incumbent firms face in the light of new technology. He proposed two manners of responding to disruptive innovation; firstly, he believed that it was not financially rational to invest in disruptive technologies because these are initially of interest to the least profitable customers in a market (Christensen, 1997). Thus, when the market reaches a stage where demand is flourishing from the lead customers, it is too late for the companies to compete in the new market. Christensen and Overdorf (2000) also presented a framework for dealing with disruptive change by focusing on resources, processes, and values wherein the *resources* included people, equipment, technologies, cash, product designs and relationships, *processes* represented the procedures and operational patterns of the firm, and *values* were the standards employees use to set priorities for making decisions. It was deduced that employees are actively exhibiting their values on a daily basis by deciding what processes are more important, which customers should be prioritized and whether a new product idea is attractive or not. This exercising of the values creates the culture of the organization that ultimately defines what the company does but also what it cannot do, which may prove to be a hurdle in the face of new innovation.

When applied to Kodak, the company was an incumbent in the photography industry who arguably recognized the scope of digital photography but implemented it incorrectly as they rushed to invest in digital technologies that would improve the quality of the film. For example, the company spent around \$500m to develop and launch the Advantix Preview film and camera system in 1996 and this was not their only attempt as they proceeded to launch their DC20 cameras, which along with its many other models, also failed to work. These products ended up failing because it was Kodak's way of offering a digital camera while still making consumers use film because ultimately, they were continuing to attempt to prosper as a company in the film business (Sirk, 2020).

Another possible explanation for Kodak's approach could be their misconception that the main market for digital photography would be professional photographers and not the amateur consumers - thus, leading them to continue focusing on film which is what they had deduced amateur photographers wanted. Therefore, regardless of the heavy investment, the company did not manage the investment well and by 1997, the sales of digital cameras were increasing by 75% a year with film camera sales increasing by a minimal 3%. By this time there were many new entrants in digital photography, mostly Japanese electronics firms who were able to eliminate the power of this large corporation. In addition to identifying the target market incorrectly, Kodak also underestimated the speed at which the appropriate consumers would demand and adapt to digital photography. This lack of foresight could be recognized as their downfall.

### **Where did Fuji succeed?**

Having enjoyed years of behaving like a monopoly in the Japanese photography market, Fujifilm also started to feel the pressures of digital technologies around the 1980s. The company went through a lot of deliberation but ultimately decided that it would be best to find ways to embrace the changes. This was followed by the launch of Fujifilm's first-ever digital camera called FUJIX-DS1P in 1988 which proved to be a revolutionary product that stored images on a semiconductor memory card. However, regardless of this, the cost of the product was reported to be incredibly high which made it restrictive to access. Furthermore, it did not complement the advancement of other technologies wherein consumers were still not able to use computers to edit their photos, so a gap was left in entirely meeting consumer demand. Therefore, the product was not the company's biggest success and they respectfully accepted that (Sirk, 2020).



Figure 3: The QuickSnap Camera

Around the 1990s, Fujifilm realized that the film market was starting to show signs of growth and profitability. As a result of this, the company wanted to monetize on the knowledge they had gained over the years and introduced the QuickSnap disposable camera that grew to be a craze amongst the population. This product cost only \$6 and was one of the major forces that catapulted Fujifilm forward and allowed them to



become market leaders in film by the end of the 20th century. As a result of all this success, the executives at the company were starting to think that the digital threat was not as serious as they had originally thought it to be. However, the joy was short-lived as the film market started to contract and profitability decreased (Sirk, 2020). What saved Fujifilm was their response to the crisis they were encountering. Around 2003, when the digital tide hit the industry hard, the company hired Shigetaka Komori who facilitated the dramatic retooling of the company which would dictate if they survived in the face of this disruption. With shutting most of the film manufacturing plants and downsizing the company by cutting 5000+ jobs and reducing operating costs by \$500 million, there was some space to change the direction of the company to one which was more technology driven. In light of this, the company started to capitalize heavily on their scientific assets including taking the chemical compounds that had been developed over the years outside of the photography context and reapplying them in the healthcare and cosmetics industry (Sirk, 2020).

Though strange at first, the company managed to gain a large amount of success by innovating in the face of disruption. As of data from 2020, around 1.05 trillion Japanese yen was contributed to the company's annual income from healthcare and material solutions, making it the largest segment of the company (Statista, 2021). On the other hand, a very minimal percentage of the annual income came from the traditional film photography products, but Komori stated many years back that the company will never let go of this segment entirely which worked in their favour when the Fujifilm Instax started to gain popularity after the trend of soft film photographs returned.

### **Conclusion**

On the whole, the digital disruption hit the photography industry and proved challenging for many incumbent firms who were suddenly forced into innovating to survive. As a result, the story in the photography industry has completely flipped from what it once was; looking back at the beginning of the 1960s, Kodak had 10 times the amount of revenue made by Fujifilm, skip a few decades from then and Kodak has filed for bankruptcy while Fujifilm is doing great.

The main explanation for the above boils down to the fact that when both companies were faced with digital disruption, they responded to it differently. While Kodak arguably went about warming up to digital technologies incorrectly, Fujifilm decided to create a new path for itself by finding varying ways to apply technology and re-deploy its assets to innovate in order to survive. In this case, Fujifilm is a prime example of a company that was able to overcome the stubbornness of institutional memory, while Kodak was stuck on wanting to do what they always did and what made them great.

Ultimately, both companies made mistakes along the way, but Fujifilm knew when to draw the line and respectfully exit the arena while learning from their failures. It can be argued that Kodak, however, set the course of its own downward spiral by repeatedly trying to prove itself in a manner that did not work anymore.

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